CLAIMS

What is claimed is:

1. An abrasive wheel assembly comprising:
   (a) a flat abrasive wheel having a rear face, a front face and an outer wheel diameter, wherein the wheel is not internally reinforced;
   (b) a front flange at the front face;
   (c) a rear flange at the rear face; and
   (d) a reinforcement layer, concentric with the wheel and applied to the front flange of the wheel, wherein said reinforcement layer has a polygonal shape selected from the group consisting of triangle, pentagon, hexagon and octagon, and a polygon largest diameter that is no greater than about 75% of said outer wheel diameter.

2. The abrasive wheel assembly of Claim 1, wherein the polygon smallest diameter is at least about 50% of said outer wheel diameter.

3. The abrasive wheel assembly of Claim 1, wherein the polygon smallest diameter is at least about 25% of said outer wheel diameter.

4. The abrasive wheel assembly of Claim 1, wherein the reinforcement layer includes fiberglass cloth.

5. The abrasive wheel assembly of Claim 1, further comprising a second reinforcement layer between the rear flange and the rear face of the wheel.

6. An abrasive wheel assembly comprising:

(a) a flat internally reinforced abrasive wheel having a rear face, a front face and an outer wheel diameter;

(b) a front flange at the front face;

(c) a rear flange at the rear face; and

(d) a reinforcement layer, concentric with the wheel and applied to the front face of the wheel, wherein said reinforcement layer has a hexagonal shape, and a hexagon largest diameter that is no greater than about 75% of said outer wheel diameter.

7. The abrasive wheel of Claim 1, wherein the polygon largest diameter is no greater than 66% of said outer wheel diameter.